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PTO/SB/21 (09-04)

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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	09/640,284
	Filing Date	August 16, 2000
	First Named Inventor	Ye
	Art Unit	2672
	Examiner Name	Amini, Javid A.
Total Number of Pages in This Submission	Attorney Docket Number	YOR92000014US1 (8728-378)

ENCLOSURES (Check all that apply)		
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Firm Name	F. Chau & Associates, LLC		
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Date	June 14, 2006	Reg. No.	48,909

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Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL

For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 500.00

Complete if Known

Application Number	09/640,284
Filing Date	August 16, 2000
First Named Inventor	Ye
Examiner Name	Amini, Javid A.
Art Unit	2672
Attorney Docket No.	YOR92000014US1 (8728-378)

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent	50	25
Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Multiple Dependent Claims	Fee (\$)	Fee Paid (\$)
- 20 or HP = _____ x _____ = _____						
HP = highest number of total claims paid for, if greater than 20						
Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)			
- 3 or HP = _____ x _____ = _____						
HP = highest number of independent claims paid for, if greater than 3						

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
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4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other: Appeal Brief 500.00

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Signature		Registration No. (Attorney/Agent) 48,909
Name (Print/Type)	Nathaniel T. Wallace	Telephone 516-692-8888
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PATENTS

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

APPLICANT(S): Ye DOCKET: YOR92000014US1 (8728-378)
SERIAL NO.: 09/640,284 GROUP ART UNIT: 2672
FILING DATE: 8/16/2000 EXAMINER: Amini, Javid A.
FOR: **SYSTEM AND METHOD FOR COMMUNICATIONS AMONG
EMBEDDED DEVICES USING VISUAL IMAGES**

Mail Stop Appeal Brief-Patents
Commissioner for Patents
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APPEAL BRIEF

In response to the Final Office Action dated December 13, 2005, finally rejecting Claims 3-5, 7, 8, 10-13, 15-17, 19, 20 and 22-26 under 35 U.S.C. 112, second paragraph, and Claims 3, 15, 31, and 32 under 35 U.S.C. §103(a), Applicant appeals pursuant to the Notice of Appeal filed on April 11, 2006 and submits this appeal brief.

06/27/2006 MAHRED1 00000014 500510 09640284
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Dated: June 14, 2006



Nathaniel T. Wallace



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10. RELATED PROCEEDINGS APPENDIX	NONE



1. Real Party in Interest

The real party in interest is International Business Machines Corporation, the assignee of the entire right, title, and interest in and to the subject application by virtue of an assignment of record.

2. Related Appeals and Interferences

None.

3. Status of Claims

Claims 3-5, 7, 8, 10-17, 19, 20, 22-26, 31 and 32 are pending, stand rejected, and are under appeal.

Claims 1, 2, 6, 9, 18, 21, 27-30 have been cancelled.

A copy of the Claims as pending is presented in the Appendix.

4. Status of Amendments

Claims 27-30 were added by the Amendment under 37 C.F.R. §1.111, filed December 1, 2003. This Amendment was entered.

Claims 1, 6, 15, 18 and 29 were amended by the Amendment under 37 C.F.R. §1.111, filed April 29, 2004. This Amendment was entered.

Claims 1, 3-6, 9, 10, 12, 15-18, 27, and 29 were amended by the Amended under 37 C.F.R. §1.111, filed December 17, 2004.

This Amendment was entered.

Claims 3 and 15 were amended, Claims 1, 2, 6, 9, 18, 21 and 27-30 were cancelled, and Claims 31 and 33 were added by the Amendment under 37 C.F.R. §1.111, filed April 14, 2005. This Amendment was entered.

5. Summary of Claimed Subject Matter

The present invention relates generally to communications, and more specifically, to a system and method for wireless communications.

Referring to Claims 3 and 15, a method of visual communication between a signal transmitting device and a signal receiving device comprises adjusting a display unit of said signal transmitting device and a visual recording device of said signal receiving device and using an alternating display process to establish a visual connection between said display unit and said visual recording device (see for example, page 18, line 21 to page 19, line 3 and Figures 4-7). The method includes encoding a signal pattern as a visual image pattern using a generated signal template of said signal transmitting device (see for example, page 34, lines 9-14), visually transmitting the visual image pattern through free space from the display unit of said signal transmitting device (see for example, page 34, lines 14-15), receiving the visual image pattern using the visual recording device of said signal receiving device (see for example, page 34, lines 15-17), and decoding the signal pattern from the visual image pattern using an image decoder of the signal receiving device (see for example, page 34, lines 17-19).

Adjusting the visual recording device includes the steps of automatically adjusting pan and tilt of the visual recording

device to have a view of the visual image pattern displayed by the display unit (see for example, page 21, line 21 to page 22, line 22 and Figure 6), and automatically adjusting an angle size of the visual recording device (see for example, page 24, line 20 to page 27, line 17 and Figures 7 and 8). Automatically adjusting the pan and tilt for the visual recording device comprises selecting a first tilt and a first pan position (see for example, page 22, lines 8-10 and Figure 6), panning for a position that does not overlap said first pan position (see for example, page 22, lines 16-18 and Figure 6), checking if panning positions have been exhausted (see for example, page 24, lines 7-8 and Figure 7), determining whether the first tilt is in a horizontal position if all panning positions have been exhausted (see for example, page 28, lines 14-16 and Figure 9), and determining a new tilt by moving the first tilt upwards for the value of $h/2$ if the first tilt is in a horizontal position (see for example, page 28, lines 16-18 and Figure 9).

Referring to Claims 31 and 32, adjusting a display unit of said signal transmitting device and a visual recording device of said signal receiving device and using an alternating display process to establish a visual connection between said display unit and said visual recording device (see for example, page 18, line 21 to page 19, line 3 and Figures 4-7). The method includes encoding a signal pattern as a visual image pattern using a

generated signal template of said signal transmitting device (see for example, page 34, lines 9-14), visually transmitting the visual image pattern through free space from the display unit of said signal transmitting device (see for example, page 34, lines 14-15), receiving the visual image pattern using the visual recording device of said signal receiving device (see for example, page 34, lines 15-17), and decoding the signal pattern from the visual image pattern using an image decoder of the signal receiving device (see for example, page 34, lines 17-19 and Figure 16).

Decoding comprises dividing the visual image pattern into a plurality of blocks (see for example, page 35, lines 3-5), determining the centers of said blocks using a position and radius look-up table (see for example, page 35, lines 5-8), creating a plurality of circles within said blocks having corresponding centers and radiuses determined by the position and radius look-up table (see for example, page 35, lines 8-11), calculating average image intensities within said circles (see for example, page 35, lines 12-14), using average image intensities within said circles as average image intensities of respective blocks of each of said circles (see for example, page 35, lines 13-14), determining a plurality of black and white intensities from said average intensities of respective blocks of each of said circles using predetermined values (see for

example, page 35, lines 14-16); and decoding a pattern created by said black and white intensities (see for example, page 35, line 21 to page 36, line 2), wherein the radiuses of said circles are 35% of the length of their respective blocks (see for example, page 34, lines 2-5).

Referring particularly to Claims 15 and 32, a program storage device readable by machine, tangibly embodying a program of instructions executable by machine to perform method steps for communication between processing devices is described at for example, page 15, line 13 to page 16, line 7.

6. Grounds of Rejection to be Reviewed on Appeal

A. Claims 3-5, 7, 8, 10-13, 15-17, 19, 20 and 22-26 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

B. Claims 3 and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Goodridge ("The Environment Understanding Interface: Detecting and Tracking Human Activity through Multimedia Sensors").

C. Claims 31 and 32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Goodridge ("The Environment Understanding Interface: Detecting and Tracking Human Activity through Multimedia Sensors"), and further in view of Rhoads (U.S. Patent Application No. 2004/0005093).

7. Argument

A. The Claim Rejections Under 35 U.S.C. 112, second paragraph Are Legally Deficient.

Per 35 U.S.C. §112, second paragraph, the specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the Applicant regards as his invention.

The purpose of the second paragraph of 35 USC 112 is to allow one skilled in the art to know what the patent covers, so that those who would approach the area circumscribed by the claims of a patent may more readily and accurately determine the boundaries of protection involved and evaluate the possibility of infringement and dominance.

By the rejection, the Examiner indicated essentially that in Claims 3, 15, 31 and 32 "it is not clear whether Applicant refers to a separate device or whether the same device," with reference to "adjusting a display unit" "because Applicant claims that there is free space between the display device and the visual device in the claims."

Respectfully, the term "free space" does not appear in Claims 15 and 32. Further, Claims 3 and 31 recite method steps; therefore, whether a display unit and a visual recording device are separate devices is immaterial to patentability.

With respect to the merits of the rejection: Claims 3 and 31 clearly distinguish between "a display unit of said signal transmitting device" and "a visual recording device of said signal receiving device", and a display process to establish a visual connection between said display unit and said visual recording device. Whether the display unit and the visual recording device are physically the same device or not is immaterial to the claims - Claims 3 and 15 require only that a visual image pattern is visually transmitted through free space. The term "free space" merely reinforces the term "visually transmitting." Accordingly, one of ordinary skill in the art would appreciate that an image is displayed and that the displayed image is visually transmitted to a visual recording device. With reference to the Specification; it is clear that free space separates the display device and the visual recording device, for example, see Figure 1.

Similarly, Claims 15 and 32 claim, *inter alia*, "generating a visual image pattern using a generated signal template; displaying the visual image pattern on a display unit; adjusting a visual recording device and said display unit and using an alternating display process to establish a visual connection between the processing devices; acquiring, visually, an image of the visual image pattern displayed by the display unit using the visual recording device." One of ordinary skill in the art would

appreciate that an image is displayed and that the displayed image is visually transmitted to a visual recording device in view of the limitations of Claims 15 and 32.

Accordingly, the rejection of Claims 3, 15, 31 and 32 should be overruled. While no specific rejection under 35 U.S.C. §112, second paragraph has been made against the dependent claims, the dependent claims are believed to be allowable for at least the reasons given for Claims 3 and 15. Reconsideration of the rejection is respectfully requested.

B. The Claim Rejections Under 35 U.S.C. 103 Are Legally Deficient.

In rejecting claims under 35 U.S.C. §103, the Examiner bears the initial burden of presenting a *prima facie* case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532 (Fed. Cir. 1993). The burden of presenting a *prima facie* case of obviousness is only satisfied by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. In re Fine, 837 F.2d 1071, 1074 (Fed. Cir. 1988). A *prima facie* case of obviousness is established when the teachings of the prior art itself would appear to have suggested the claimed subject matter to one of ordinary skill in the art. In re Bell, 991 F.2d 781, 782 (Fed.

Cir. 1993). If the Examiner fails to establish a *prima facie* case, the rejection is improper and must be overturned. In re Rijckaert, 9 F.3d at 1532 (citing In re Fine, 837 F.2d at 1074).

i. Claims 3 and 15

It is respectfully submitted that at the very least, the teachings of Goodridge are legally deficient to establish a *prima facie* case of obviousness against independent Claims 3 and 15.

Claim 3 claims, *inter alia*, "an alternating display process to establish a visual connection between said display unit and said visual recording device; encoding a signal pattern as a visual image pattern using a generated signal template of said signal transmitting device; visually transmitting the visual image pattern through free space from the display unit of said signal transmitting device; receiving the visual image pattern using the visual recording device of said signal receiving device; and decoding the signal pattern from the visual image pattern using an image decoder of the signal receiving device." Claim 15 claims, *inter alia*, "generating a visual image pattern using a generated signal template; displaying the visual image pattern on a display unit; adjusting a visual recording device and said display unit and using an alternating display process to establish a visual connection between the processing devices;

acquiring, visually, an image of the visual image pattern displayed by the display unit using the visual recording device; and decoding the visual image pattern with an image decoder."

Goodridge teaches tracking a target using a video camera (see Abstract). Goodridge does not teach or suggest a visual connection between a display unit and a visual recording device, as claimed in Claim 3, or a visual connection between the processing devices as claimed in Claim 15. The Examiner has interpreted "display unit" as a "target location" (see page 4, of the Final Office Action dated December 13, 2005); this interpretation has no support in Goodridge and is contradictory to the plain meaning of the terms, the present application and the pending claims. Clearly a mere target location is not a display unit as claimed in Claims 3 and 15. For example, Goodridge is silent on how a target - a human according to the teachings of Goodridge - may be encoded/decoded. Therefore, Goodridge fails to teach or suggest "decoding the signal pattern from the visual image pattern using an image decoder of the signal receiving device" as claimed in Claim 3 or "decoding the visual image pattern with an image decoder" as claimed in Claims 15. Therefore, Goodridge fails to teach or suggest all the limitations of Claims 3 and 15.

Accordingly, the rejection of Claims 3 and 15 should be overruled.

ii. Claims 30 and 31

It is respectfully submitted that at the very least, the combined teachings of Goodridge and Rhoads are legally deficient to establish a *prima facie* case of obviousness against independent Claim 30 and 31.

Claim 31 claims, *inter alia*, "alternating display process to establish a visual connection between said display unit and said visual recording device; encoding a signal pattern as a visual image pattern using a generated signal template of said signal transmitting device; visually transmitting the visual image pattern through free space from the display unit of said signal transmitting device; receiving the visual image pattern using the visual recording device of said signal receiving device; and decoding the signal pattern from the visual image pattern using an image decoder of the signal receiving device." Claim 32 claims, *inter alia*, "generating a visual image pattern using a generated signal template; displaying the visual image pattern on a display unit; adjusting a visual recording device and said display unit and using an alternating display process to establish a visual connection between the processing devices; acquiring, visually, an image of the visual image pattern displayed by the display unit using the visual recording device; and decoding the visual image pattern with an image decoder."

Goodridge teaches tracking a target using a video camera (see Abstract). Goodridge does not teach or suggest a visual connection between a display unit and a visual recording device, as claimed in Claim 31, or a visual connection between the processing devices as claimed in Claim 32. Goodridge's target location is not analogous to a display unit as claimed in Claims 31 and 32. For example, a target location of Goodridge is a human. Clearly, a human is not a "display unit of said signal transmitting device" as claimed in Claim 31, nor does a human display a visual image pattern generated using a generated signal template (see Claim 32). Further, as stated with respect to Claims 3 and 15, Goodridge is silent on how a target, i.e., human, may be encoded/decoded. Therefore, Goodridge fails to teach or suggest "decoding the signal pattern from the visual image pattern using an image decoder of the signal receiving device" as claimed in Claim 31 or "decoding the visual image pattern with an image decoder" as claimed in Claims 32. Therefore, Goodridge fails to teach or suggest all the limitations of Claims 31 and 32.

Rhoads teaches a method and apparatus for providing media-independent security for a document (see Abstract). Rhoads teaches that a page may be scanned (see paragraph [0072]). Rhoads does not teach or suggest a decoding of the page, much less a visual image pattern transmitted through free space from


a display unit, essentially, as claimed in Claims 31 and 32. Nowhere does Rhoads teach or suggest "decoding the signal pattern from the visual image pattern using an image decoder of the signal receiving device" as claimed in Claim 31 or "decoding the visual image pattern with an image decoder" as claimed in Claims 32. Therefore, Rhoads fails to cure the deficiencies of Goodridge.

The combined teachings of Goodridge and Rhoads fail to teach or suggest "decoding the signal pattern from the visual image pattern using an image decoder of the signal receiving device" as claimed in Claim 31 or "decoding the visual image pattern with an image decoder" as claimed in Claims 32. Accordingly, the rejection of Claims 31 and 32 should be overruled.

C. CONCLUSION

The claimed invention is not disclosed or suggested by the teachings of the applied prior art references, either alone or in combination. Moreover, the rejections have failed to establish deficiencies under 35 U.S.C. §112, second paragraph against independent Claims 3, 15, 31, and 32, a *prima facie* case of obviousness under 35 U.S.C. §103 against independent Claims 3 and 15 over Goodridge or a *prima facie* case of obviousness under 35 U.S.C. §103 over Goodridge and Rhoads with respect to Claims 30 and 31 for at least the reasons noted above. Claims 4, 5, 7, 8, and 10-13 depend from Claim 3. Claims 16, 17, 19, 20, and 22-26 depend from Claim 15. The dependent claims are believed to be allowable for at least the reasons given for Claims 3 and 15. Accordingly, it is respectfully requested that the Board overrule the rejections of Claims 3-5, 7, 8, 10-17, 19, 20, 22-26, 31 and 32.

Date: June 14, 2006

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8. CLAIMS APPENDIX

What is claimed is:

3. A method of visual communication between a signal transmitting device and a signal receiving device comprising:

adjusting a display unit of said signal transmitting device and a visual recording device of said signal receiving device and using an alternating display process to establish a visual connection between said display unit and said visual recording device;

encoding a signal pattern as a visual image pattern using a generated signal template of said signal transmitting device;

visually transmitting the visual image pattern through free space from the display unit of said signal transmitting device;

receiving the visual image pattern using the visual recording device of said signal receiving device; and

decoding the signal pattern from the visual image pattern using an image decoder of the signal receiving device,

wherein adjusting the visual recording device includes the steps of:

automatically adjusting pan and tilt of the visual recording device to have a view of the visual image pattern displayed by the display unit; and

automatically adjusting an angle size of the visual recording device,

and wherein automatically adjusting the pan and tilt for the visual recording device comprises:

selecting a first tilt and a first pan position;

panning for a position that does not overlap said first pan position;

checking if panning positions have been exhausted;

determining whether the first tilt is in a horizontal position if all panning positions have been exhausted; and

determining a new tilt by moving the first tilt upwards for the value of $h/2$ if the first tilt is in a horizontal position.

4. The method of claim 3, wherein the decoding comprises:

dividing the visual image pattern into a plurality of blocks;

determining the centers of said blocks using a position and radius look-up table;

creating a plurality of circles within said blocks having corresponding centers and radiuses determined by the position and radius look-up table;

calculating average image intensities within said circles;

using average image intensities within said circles as average image intensities of respective blocks of each of said circles;

determining a plurality of black and white intensities from said average intensities of respective blocks of each of said circles using predetermined values; and

decoding a pattern created by said black and white intensities.

5. The method of claim 3, wherein the alternating display process comprises:

alternating an image on the display unit of a sending device within an allotted time;

collecting a plurality of alternating images by said visual recording device of the visual receiving device within an allotted time;

calculating image differences of consecutive alternating images;

changing said image differences into black and white images based on pixel values; and

collecting a plurality of blobs for each of said image differences using the visual recording device, wherein the blob having a largest area value represents the display unit.

7. The method of claim 4, wherein the radiuses of said circles are 35% of the length of their respective blocks.

8. The method of claim 5, wherein the blobs are groups of adjoining pixels each having an identical pixel value.

10. The method of claim 3, wherein if all panning positions have not been exhausted, further comprising panning for a position that does not overlap a previous pan position.

11. The method of claim 3, wherein if the first tilt is above the horizontal position, the new tilt will be below the horizontal position and symmetric to the first tilt.

12. The method of claim 3, wherein if the first tilt is below the horizontal position, further comprising:

determining that the first tilt is not above the horizontal position;

finding a previous tilt that is symmetric to the first tilt and is above the horizontal position;

creating a possible tilt by moving the first tilt upwards for $h/2$ with respect to said previous tilt; and

determining if said possible tilt passes a vertical direction with respect to the horizontal position.

13. The method of claim 12, wherein if said possible tilt passes the vertical position, then all tilts are exhausted.

14. The method of claim 12, wherein if said possible tilt does not pass the vertical position, then said possible tilt is a next tilt.

15. A program storage device readable by machine, tangibly embodying a program of instructions executable by machine to perform method steps for communication between processing devices comprising the steps of:

- generating a visual image pattern using a generated signal template;

- displaying the visual image pattern on a display unit;

- adjusting a visual recording device and said display unit and using an alternating display process to establish a visual connection between the processing devices;

- acquiring, visually, an image of the visual image pattern displayed by the display unit using the visual recording device;
- and

- decoding the visual image pattern with an image decoder,

- wherein the instructions for adjusting the visual recording device and said display unit includes instructions for:

automatically adjusting the pan and tilt of the visual recording device to have a view of the visual image pattern displayed by the display unit; and

automatically adjusting the angle size of the recording device,

and wherein the instructions for performing the step of automatically adjusting the pan and tilt for a visual recording device includes instructions for performing the steps of:

selecting a first tilt and a first pan position;

panning for a position that does not overlap said first pan position;

checking if panning positions have been exhausted;

determining whether the first tilt is in a horizontal position if all panning positions have been exhausted; and

determining a new tilt by moving the first tilt upwards for the value of $h/2$ if the first tilt is in a horizontal position.

16. The program storage device of claim 15, wherein the instructions for decoding includes instructions for:

dividing the image of the visual image pattern into a plurality of blocks;

determining the centers of said blocks using a position and radius look-up table;

creating a plurality of circles within said blocks having corresponding centers and radiuses determined by the position and radius look-up table;

calculating average image intensities within said circles;

using average image intensities within said circles as average image intensities of respective blocks of said circles;

determining a plurality of black and white intensities from said average intensities of respective blocks of said circles using predetermined values; and

decoding a pattern created by said black and white intensities.

17. The program storage device of claim 15, wherein the alternating display process comprises:

alternating an image on the display unit of a sending device within an allotted time;

collecting a plurality of alternating images by a visual recording device of a receiving device within an allotted time;

calculating image differences of consecutive alternating images;

changing said image differences into black and white images based on pixel values; and

collecting a plurality of blobs for each of said image differences with the visual recording device, wherein the blob having a largest area value represents the signal display.

19. The program storage device of claim 16, wherein the radiuses of said circles are 35% of the length of their respective blocks.

20. The program storage device of claim 17, wherein the blobs are groups of adjoining pixels each having an identical pixel value.

22. The program storage device of claim 15, wherein if all panning positions have not been exhausted, the instructions for performing the step of panning for a position that does not overlap the first pan position are repeated.

23. The program storage device of claim 15, wherein if the first tilt is above the horizontal position, the new tilt will be below the horizontal position and symmetric to the first tilt.

24. The program storage device of claim 15, wherein if the first tilt is below the horizontal position, including instructions for performing the steps of:

determining that the first tilt is not above the horizontal position;

finding a previous tilt that is symmetric to the first tilt and is above the horizontal position;

creating a possible tilt by moving the first tilt upwards for $h/2$ with respect to said previous tilt;

determining if said possible tilt passes a vertical direction with respect to the horizontal position.

25. The program storage device of claim 24, wherein if said possible tilt passes the vertical position, then all tilts are exhausted.

26. The program storage device of claim 24, wherein if said possible tilt does not pass the vertical position, then said possible tilt is a next tilt.

31. A method of visual communication between a signal transmitting device and a signal receiving device comprising:

adjusting a display unit of said signal transmitting device and a visual recording device of said signal receiving device

and using an alternating display process to establish a visual connection between said display unit and said visual recording device;

encoding a signal pattern as a visual image pattern using a generated signal template of said signal transmitting device;

visually transmitting the visual image pattern through free space from the display unit of said signal transmitting device;

receiving the visual image pattern using the visual recording device of said signal receiving device; and

decoding the signal pattern from the visual image pattern using an image decoder of the signal receiving device,

wherein the decoding comprises:

dividing the visual image pattern into a plurality of blocks;

determining the centers of said blocks using a position and radius look-up table;

creating a plurality of circles within said blocks having corresponding centers and radiuses determined by the position and radius look-up table;

calculating average image intensities within said circles;

using average image intensities within said circles as average image intensities of respective blocks of each of said circles;

determining a plurality of black and white intensities from said average intensities of respective blocks of each of said circles using predetermined values; and

decoding a pattern created by said black and white intensities,

wherein the radiuses of said circles are 35% of the length of their respective blocks.

32. A program storage device readable by machine, tangibly embodying a program of instructions executable by machine to perform method steps for communication between processing devices comprising the steps of:

generating a visual image pattern using a generated signal template;

displaying the visual image pattern on a display unit;

adjusting a visual recording device and said display unit and using an alternating display process to establish a visual connection between the processing devices;

acquiring, visually, an image of the visual image pattern displayed by the display unit using the visual recording device; and

decoding the visual image pattern with an image decoder,

wherein the instructions for decoding includes instructions for:

dividing the image of the visual image pattern into a plurality of blocks;

determining the centers of said blocks using a position and radius look-up table;

creating a plurality of circles within said blocks having corresponding centers and radiuses determined by the position and radius look-up table;

calculating average image intensities within said circles;

using average image intensities within said circles as average image intensities of respective blocks of said circles;

determining a plurality of black and white intensities from said average intensities of respective blocks of said circles using predetermined values; and

decoding a pattern created by said black and white intensities,

wherein the radiuses of said circles are 35% of the length of their respective blocks.